

REMARKS

Claims 1-24 are currently pending in the above-identified patent application. Claims 1, 9 and 17 have been amended to recite that the delta log is separate from the plurality of data storage units; that is, the delta log is not one of the plurality of data storage units. No new matter has been added by these changes since support therefor may be found on page 6, lines 3-15, wherein it is stated that: "The delta log 108 may be a file or data storage area that it allocated on the data storage units after it is determined that the delta log 108 is necessary. In some embodiments, the delta log 108 may be stored on a data storage device that is separate from the data storage units 104 or 106. For example, the controller 102 may have a local data storage system, such as NVRAM, FLASH, a disk drive, or other storage device, that may be used for temporary storage of the delta log 108. ... The location and storage system used to store the delta log 108 may be any storage area to which controller 102 has communication." (Emphasis added by applicants.).

Applicants' attorney, Samuel M. Freund, and the Examiner, Mr. Mardochee Chery, participated in a telephonic interview beginning at 11 am EST on October 20, 2008. Therein, items (a) and (b) of Section 3 (Response to Arguments) of the Office Action dated August 20, 2008 were discussed. In particular, the Examiner's statement in item (a): "Clearly, there is no indication of what (storage unit) is used as a 'delta log' for recording incoming data during removal of the data storage units. The claims simply require 'starting a delta log' and 'storing a record of changes in said delta log, irrespective of where that delta log may be stored.", was discussed. The Examiner offered that independent claims 1, 9 and 17 might be allowable with limitations that the delta log was stored independently of the plurality of data storage units, as long as the resulting claims did not read on other teachings of Ofek (U.S. Patent No. 6,549,921).

In the Office Action dated August 20, 2008 the Examiner rejected claims 1-24 35 U.S.C. 102(e) as being anticipated by Ofek (U.S. 6,549,921). As per claim 1, the Examiner stated that Ofek discloses a method for recovering data in a redundant data storage system having a plurality of data storage units [Fig. 1,

Col. 14, lines 38-46], said method comprising: storing said data on said plurality of data storage units according to a redundant data storage method [Col. 14, lines 38-46]; removing one of said plurality of data storage units for a period [Col. 14, lines 48-49]; starting a delta log concurrent with said step of removing one of said plurality of data storage units [Col. 14, lines 50-]; changing a portion of said data on the remainder of said plurality of data storage units during the period when one of said plurality of data storage units is removed in accordance with the redundant data storage method [Col. 14, lines 59-64]; storing a record of said changes in said delta log during the when one of said plurality of data storage units is removed [Col. 14, lines 59-64]; replacing said one of said plurality of data storage units [Col. 14, lines 59-64]; and updating said one of said plurality of data storage units [Col. 14, lines 59-64].

As per claims 9 and 17, the Examiner continued that the rationale in the rejection of claim 1 is herein incorporated. The Examiner asserted that Ofek further discloses a redundant data storage system capable of fast restoration of serviced data storage units [Fig. 1] comprising: a plurality of data storage units [Fig. 1, Storage devices 15, 16, 42, 43]; and a controller that stores data on said plurality of data storage units according to a redundant data storage method [Fig. 1, controllers 31, 34], changes a portion of said data after taking one of said plurality of said data storage units off line [Col. 18, lines 1-7, stores a record of the changes in a delta log that are made to the remainder of the plurality of said data storage units [Col. 18, lines 5-7], brings said one of said plurality of said data storage units online, and updates said one of said plurality of said data storage units by updating those portions of data recorded in said delta file [Cols. 18, 13-19].

The Examiner also rejected dependent claims 2-8, 10-16, and 18-24 as also being anticipated by Ofek.

Applicants respectfully disagree with the rejection of claims 1-24 under 35 U.S.C. 102(e) as being anticipated by Ofek. Reexamination and reconsideration are requested.

Turning now to Col. 14, lines 38-64, of Ofek, applicants wish to point out that during the second operating mode, while the second data storage facility is isolated from the first data storage facility, changes made during this operating mode are recorded to the data in the first data storage facility (in its normal operating mode), and data is transferred from the isolated second data storage facility to the medium in the backup facility simultaneously with and independently of the operation of the data processing system with the first data storage facility. Subsequent to this step (after completion of the data transfer and independently of the data processing system), the data in the second data storage facility is updated by transferring data for which changes have been recorded during the second operating mode from the first data storage facility. Therefore, applicants believe that the backup medium of Ofek is not used as a "delta log" for recording data incoming to the data processing system while the second data storage facility has been isolated therefrom. Rather, the backup facility is used to backup the second data storage facility. Nor is a "delta log" started at all since it is stated that the first data storage facility continues its normal operations.

Moreover, claim 10 of Ofek teaches that data is stored in data blocks in the first and second data storage facilities such that during the backup operating mode, changes made to blocks of the first data storage facility are identified and the data in each changed block is transferred to the second data storage facility. Thus, no "delta log" is started when the second data storage facility is isolated.

Ofek in Col 7, lines 17-24 states: "Unlike the prior art operation of the local and remote systems like those shown in Fig. 1, a system constructed in accordance with this invention enables the remote system **11** (1) to disconnect from the local system **10**, (2) to enable all the data to transfer to a conventional backup unit **53**, such as a conventional tape backup unit, (3) to reconnect to the local system **10** and (4) to resynchronize to the local system **10** and **10** remote system **11** automatically." (Emphasis added by applicants). Transferring **all** the data to a conventional backup unit is the antithesis of a delta log.

As stated on page 4, beginning on line 22, and ending on page 5, line 3, of the subject Specification: “When one of the data storage units **104** or **106** becomes unavailable, a delta log may be kept. The delta log **108** may keep track of any changes made to the data during temporary outage of one of the data storage units **104** or **106**. When the data storage unit becomes available again, only the changed data as recorded in the delta log **108**, may need to be updated in the restarted data storage unit.” (Emphasis added by applicants.). Thus, the delta log of the present invention keeps track of changes made to the data during an outage of one of the data storage units.

Subject claim 1, as amended, recites in part: “...removing one of said plurality of data storage units for a period; starting a delta log separate from said plurality of data storage units concurrent with said step of removing one of said plurality of data storage units; changing a portion of said data on the remainder of said plurality of data storage units during the period when one of said plurality of data storage units is removed in accordance with the redundant data storage method; storing a record of said changes in said delta log during the period when one of said plurality of data storage units is removed; replacing said one of said plurality of data storage units; and updating said one of said plurality of data storage units by updating those portions of data recorded in said delta log.” (Emphasis added by applicants.). Claim 1 clearly recites the use of a delta log separate from the plurality of data storage units for storing a record of changes on the remainder of the plurality of data storage units during the period when one of the data storage units is removed, and updating the removed data storage unit with those portions recorded on the delta log when the data storage unit is restored to operation.

It is well known that “Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration.” *Soundscriber Corp. v. U.S.*, 360 F.2d 954, 960, 148 USPQ 298, 301, adopted, 149 USPQ 640 (Ct. Cl. 1966). Since applicants respectfully believe that Ofek does not teach a delta log, applicants believe that Ofek does not anticipate independent claim 1.

Independent claims 9 and 17, as amended, also recite the use of a delta log (“third means” in claim 17) separate from the plurality of data storage units. Applicants respectfully believe that these claims are patentable over Ofek for similar reasons to the arguments given for claim 1, hereinabove. Ofek does not teach the use of a delta log.

Concerning the rejection of dependent claims 2-8, 10-16 and 18-24, since these claims depend from independent claims 1, 9 and 17, respectively, and, for the reasons set forth hereinabove, applicants believe that independent claims 1, 9 and 17 are patentable over Ofek, applicants respectfully believe that no further response with regard to the dependent claims is required.

In view of the discussion presented hereinabove, applicants believe that subject claims 1-24, as amended, are in condition for allowance or appeal, the former action by the Examiner at an early date being earnestly solicited.

Reexamination and reconsideration are respectfully requested.

Respectfully submitted,

COCHRAN FREUND & YOUNG LLC

By:


Samuel M. Freund
Attorney for Applicants
Reg. No. 30,459
2026 Caribou Drive, Suite 201
Fort Collins, Colorado 80525
Phone: (970) 492-1100
Fax: (970) 492-1101

Date: October 20, 2008